UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30507

CSAH NO. 5

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 76)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 30507, Piers 1 and 2, were found to be in good condition with no structurally significant defects observed. A moderate accumulation of timber debris was observed at Pier 1, and a light amount of timber debris was also present at the upstream end of Pier 2. There was also a 4-foot-diameter log along the west face of pier, and along with the light drift appeared to be contributing to the 5-foot-radius, 4-foot-deep scour pocket and footing exposure along the mid portion of the pier. The extent of scour and footing exposure at Pier 2, and timber debris at both piers was comparable to the conditions found at the last inspection.

INSPECTION FINDINGS:

(A) A 5-foot-radius by 4-foot-deep scour depression exposed the top of the footing along the west side mid portion of Pier 2 for approximately 20 feet with no edge or vertical face exposure. A 2-foot-radius by 1.5-foot-deep scour depression was also observed at the upstream end of Pier 2.

(B) A 1.5-foot-wide by 1-foot-high spall was observed 10 feet from the upstream nose just below the waterline with a penetration of 1 inch and exposed reinforcing steel on the east side of Pier 1, and a 2-foot-long area of moderate to heavy scaling was observed on the west side of the pier extending 10 inches above the waterline to 1 foot below the waterline with a penetration of 1/2 inch.

(C) All concrete surfaces from the waterline to the channel bottom exhibited light scaling with random pockets of poor consolidation with typical penetrations of 1/8 to 1/4 inch.

(D) A moderate accumulation of 8-inch-diameter and smaller timber debris was observed at the upstream nose and along both faces of Pier 1. There was also a light accumulation of debris at the upstream end of Pier 2, and a 4-foot-diameter log on the channel bottom along the west face of Pier 2.

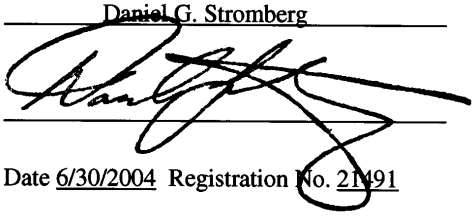
RECOMMENDATIONS:

(A) Remove the timber drift that has accumulated around the piers, especially the 4-foot-diameter log on the channel bottom, which may be influencing the scour and footing exposure along the mid portion of Pier 2.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years. Continue to monitor the footing exposure at Pier 2 during future inspections.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

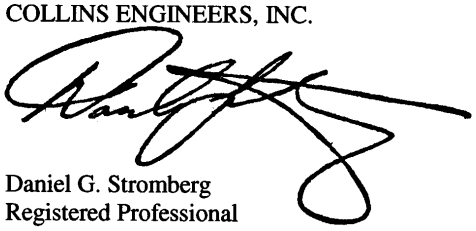
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 30507

Feature Crossed: The Rum River

Feature Carried: CSAH No. 5

Location: District 3 - Isanti County

Bridge Description: The bridge superstructure consists of three spans of multiple precast concrete girders supported by two concrete hammerhead type piers and two concrete abutments. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 25, 2002

Weather Conditions: Rainy, "50E F

Underwater Visibility: " 1 Foot

Waterway Velocity: "1 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses which rests upon a rectangular concrete footing supported on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 9.0 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the bridge seat on the upstream end of Pier 2.

Water Surface: The waterline was approximately 16.0 feet below reference.
Waterline Elevation = 898.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

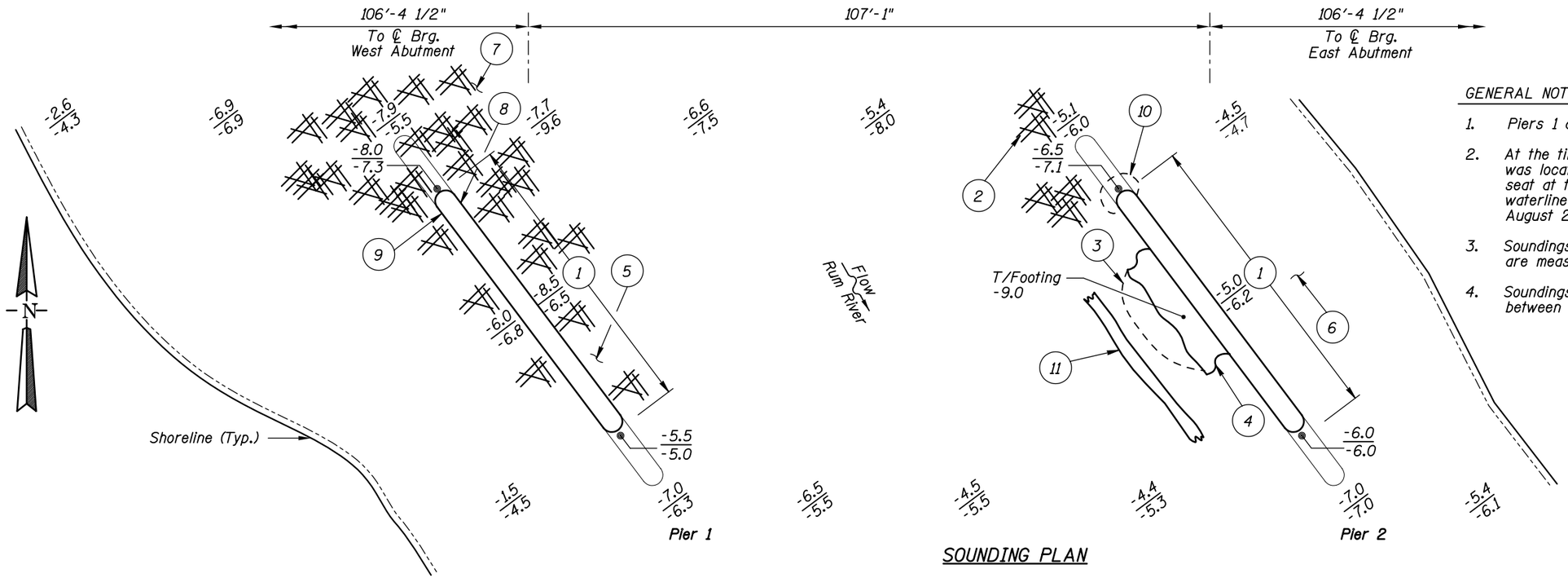
Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/09/02

Item 113: Scour Critical Bridges: Code O/96

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

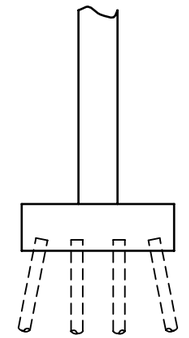
_____Yes __X__No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 25, 2002, the waterline was located approximately 16.0 feet below the top of the bridge seat at the upstream end of Pier 2. This corresponds to a waterline elevation of 898.0 based on the previous report dated August 23, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.



TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

(1) All concrete surfaces from the waterline to the channel bottom exhibited light scaling with random pockets of poor consolidation with typical penetrations of 1/8 to 1/4 inch.

(2) A light accumulation of timber debris was observed on the channel bottom extending 10 feet upstream of the upstream nose.

(3) A 5-foot-radius, 4-foot-deep scour pocket was observed along the west side of Pier 2. The channel bottom at this location consisted of sand with 3" of probe rod penetration.

(4) The top of the footing was exposed along the west side of Pier 2 for approximately 1/3 of the pier length with no vertical face exposure.

(5) The channel bottom consisted of silty sand with 12 inches of probe rod penetration.

(6) The channel bottom consisted of 1-foot-diameter riprap with some sand and gravel.

(7) A moderate accumulation of 8-inch-diameter and smaller timber debris was observed at the upstream nose and along both faces of Pier 1.

(8) A 1.5-foot-wide, 1-foot-high spall was observed 10 feet from the upstream nose just below the waterline, with a penetration of 1 inch and exposed reinforcing steel.

(9) A 2-foot-long area of moderate to heavy scaling was observed at the upstream nose of Pier 1 extending 10 inches above the waterline to 1 foot below the waterline with a penetration of 1/2 inch.

(10) A 2-foot-radius, 1.5-foot-deep scour pocket was observed at the upstream end of Pier 2.

(11) A 4-foot-diameter log was observed on the channel bottom.

Legend

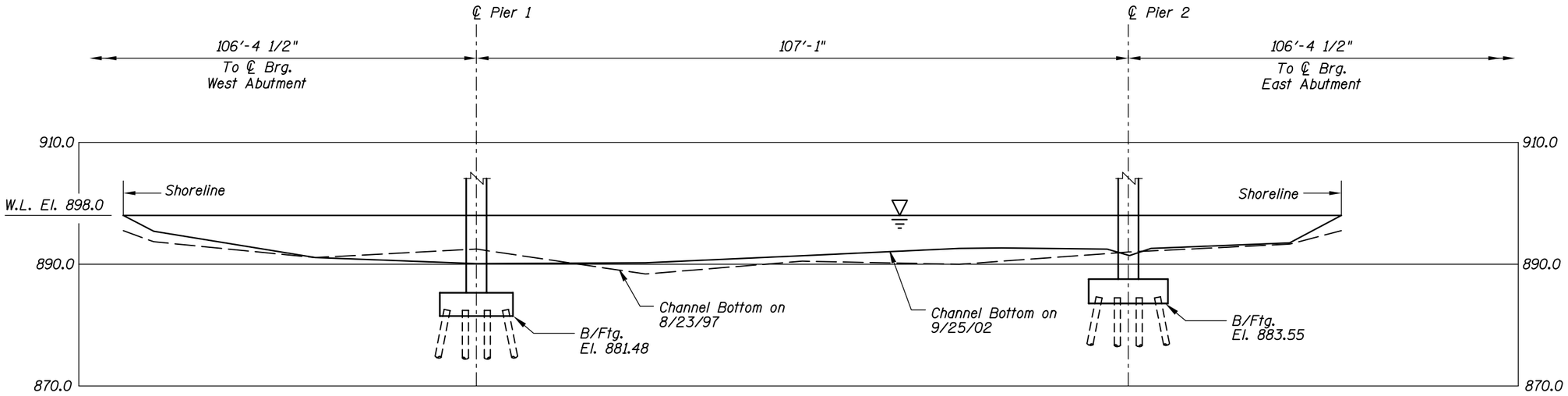
-2.0	Sounding Depth from Waterline (9/25/02)
-5.2	Sounding Depth from Waterline (8/23/97)
	Timber Debris
	Scour Depression

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

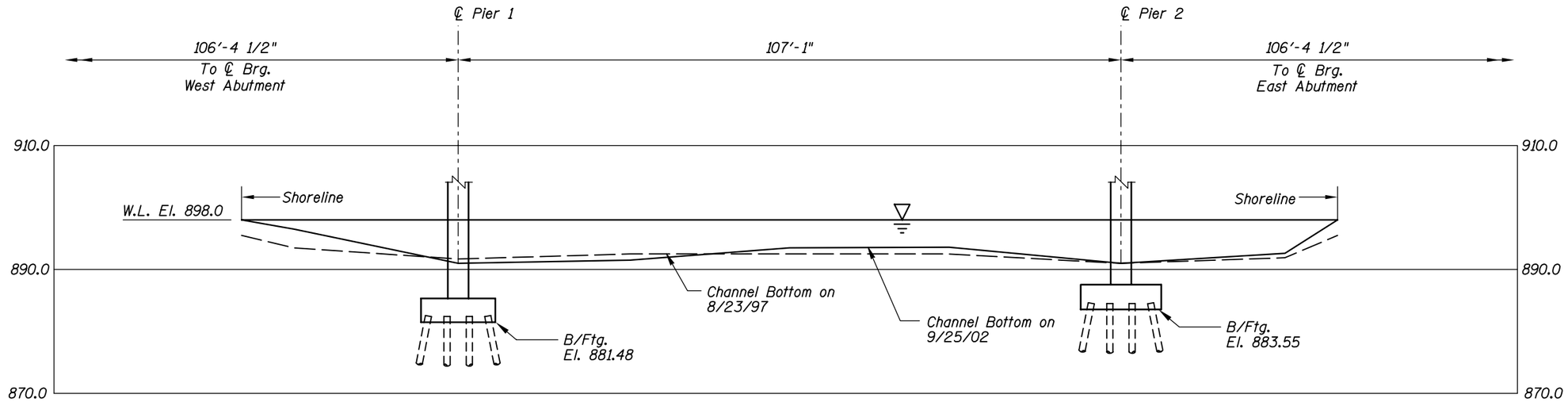
STRUCTURE NO. 30507
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35I20076		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=20'
Code: 35120076		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking Northwest.

Photograph 2. View of Pier 1, Looking East.

Photograph 3. View of Pier 2, Looking West.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 25, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 30507 WEATHER: Rainy, "50EF
WATERWAY CROSSED: The Rum River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera
TIME IN WATER: 9:30 A.M.
TIME OUT OF WATER: 10:15 A.M.
WATERWAY DATA: VELOCITY "1 f.p.s.
VISIBILITY "1 foot
DEPTH 9.0 feet maximum at Pier 2.
ELEMENTS INSPECTED: Piers 1 and 2
REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in good, sound condition with no structurally significant defects observed. A1.5-foot-wide, 1-foot-high spall with exposed reinforcing and 1inch of penetration was observed on the upstream end of Pier 1, as well as a 2-foot-long, 2-foot-high area of moderate to heavy scaling with a penetration of 1/2 inch. Light to moderate accumulations of timber debris were observed at Piers 2 and 1. A portion of the top of footing along the channel side of Pier 2 was exposed due to a 5-foot-radius, 4-foot-deep scour pocket. In addition, there was a 2-foot-radius, 1.5-foot-deep scour pocket at the upstream end of Pier 2.

FURTHER ACTION NEEDED: X YES _____ NO

Remove the timber drift that has accumulated around the piers, especially the 4-foot-diameter log on the channel bottom, which may be influencing the scour and footing exposure along the mid portion of Pier 2.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years. Continue to monitor the footing exposure at Pier 2 during future inspections.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30507
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Rum River

INSPECTION DATE September 25, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	8.5’	N	6	N	9	N	7	7	N	9	6	6	7	N	N	7	N	N
	Pier 2	9.0’	N	7	7	9	N	7	6	N	9	6	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in good, sound condition with no structurally significant defects observed. A1.5-foot-wide, 1-foot-high spall with exposed reinforcing and 1inch of penetration was observed on the upstream end of Pier 1, as well as a 2-foot-long, 2-foot-high area of moderate to heavy scaling with a penetration of 1/2 inch. Light to moderate accumulations of timber debris were observed at Piers 2 and 1. A portion of the top of footing along the channel side of Pier 2 was exposed due to a 5-foot-radius, 4-foot-deep scour pocket. In addition, there was a 2-foot-radius, 1.5-foot-deep scour pocket at the upstream end of Pier 2.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.